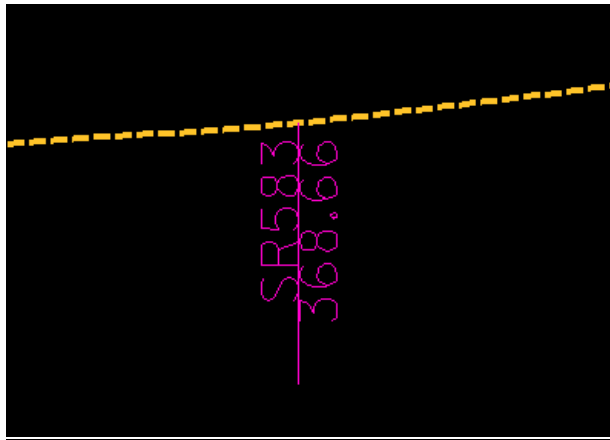


PROPOSED PROFILES (03-01-2011)

Local Road Alignments on Profile

This 3PC places location of Local Roads on Existing Mainline Profile. It actually looks at COGO and determines which chains intersect the user specified chain and then calculates the intersecting station on the user specified chain and places the chain name/elevation of each intersecting chain on the profile. Must be ran in file which contains GeoPak Profile Cell.



Proposed Profiles (Layout Profiles – VPI Based)

There are two ways to create a proposed profiles, listed in the topics below:

1. Layout Profiles (VPI Based) Dialog

After you have plotted out the existing profile (using the prwkw referenced file) you can open up the Layout Profiles Dialog (Under Road -> Geometry). This is an interactive way of creating your proposed profiles. NOTE: This tool does not work with profiles plotted with Station Equation Gaps.

STEP 1

When you invoke the Vertical Alignment Dialog, the first thing you have to do is fill out the reference information about your existing profile so that Geopak will know where it is. Below is the dialog that you will fill out. This information is the same that you used to plot the existing profile from the D & C Manager. You can Tag Identify Cell and tag the GeoPak Profile Cell to fill out all of the info.

Settings

Job Number: 471

Operator Code: KB

PGL Chain: H471 Select

Location and Scales

Horizontal Scale: 100.000000

Vertical Scale: 10.000000

Reference Station: 175+00.00 R

Reference Elevation: 320.000000

X: 30744.081500 DP

Y: 29277.244500

Profile Cell

Draw Cell at X,Y Identify Cell

OK Cancel

STEP 2

After the information is entered and the OK button is hit, the following dialog opens:

GEOPAK Profile Generator

File Tools User

Station: OFF

Elevation: OFF

Dynamic

SSD SSD

Since most proposed profiles are going to tie to the existing at the beginning of the job, the easiest way to start is to hit the DYNAMIC button and snap to the station that you are going to tie to. Once you do this, the information should match the existing and several other buttons appear. You can either add a vpi after the point you just entered, or before.

Below is an example:

GEOPAK Profile Generator

File Tools User

VPI 1

Station: 75+00.00 OFF

Elevation: 105.36 OFF

Insert Before Dynamic Insert After

SSD SSD

STEP 3

Enter all your vpi's first and then you can go back and add the vertical curves. If you press the INSERT AFTER the dialog will change to the following:

The screenshot shows the 'GEOPAK Profile Generator' window. It has a menu bar with 'File', 'Tools', and 'User'. The main area is divided into two sections for VPI 1 and VPI 2. VPI 1 has fields for 'Bk Grade' (1.4197), 'L' (0.00), 'Station' (75+00.00), and 'Elevation' (105.36), with an 'OFF' button next to the grade field. VPI 2 has fields for 'Station' and 'Elevation', both with 'OFF' buttons. Between the sections are buttons for 'Insert Before', 'Dynamic' (highlighted), and 'Delete'. To the right of VPI 2 is an 'Insert After' button. A 'Prev VPI' button is at the bottom left. At the bottom, a progress bar shows '1' and '2'.

You will now be able to enter the second vpi or you dynamically place the vpi in the design file. If you dynamically place the vpi the BK GRADE will dynamically change also. Once you have entered the vpi or placed it, you can then put in a desired BK GRADE and the vpi will change to meet this grade.

STEP 4

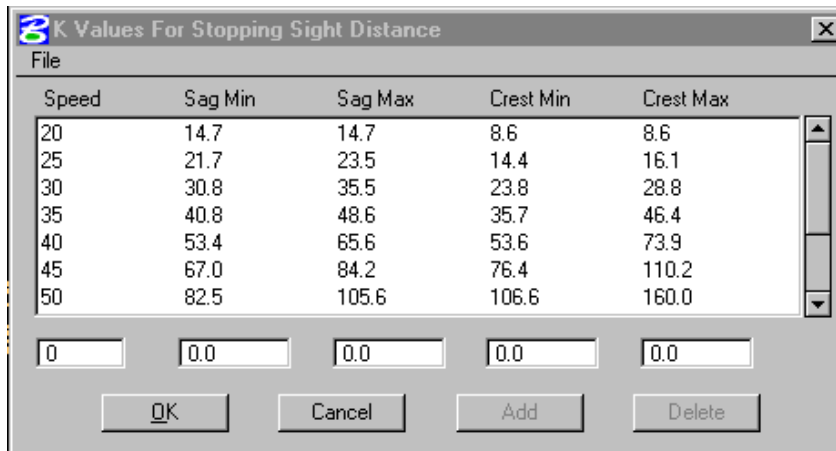
After you have entered all the vpi's, you will be able to hit the PREV VPI button and enter the vertical curve data, or enter the K-value to set the length of the curve.

Below is an example:

The screenshot shows the 'GEOPAK Profile Generator' window with three VPI sections. VPI 1 has 'Bk Grade' (0.8480), 'L' (963.88), 'Station' (75+00.00), and 'Elevation' (105.36). VPI 2 has 'Station' (84+63.88), 'Elevation' (113.53), and a 'Dynamic' button. VPI 3 has 'Fd Grade' (-0.8255), 'L' (1036.12), 'Station' (95+00.00), and 'Elevation' (104.98). Between VPI 2 and VPI 3 are 'Insert Before', 'Dynamic', 'Delete', and 'Insert After' buttons. A 'Prev VPI' button is at the bottom left. A 'Vertical Curve' section is at the bottom, containing 'Symmetrical', 'Speed' (70), 'SSD' (839.98), 'L' (empty), 'K' (530.9000), and 'Station' (empty). A 'Next VPI' button is at the bottom right. The progress bar at the bottom shows '1' and '3'.

If you want the length to be controlled by the K-value, enter the speed and the length will be automatically set. You can check the K-values that Geopak will assign, by going to the *User>K Values*. This is a table that has been set up through AASHTO guidelines. If they do not meet your needs, you can add the values that correlate to your job and save the file for further reference.

Below is the table for the K-values:

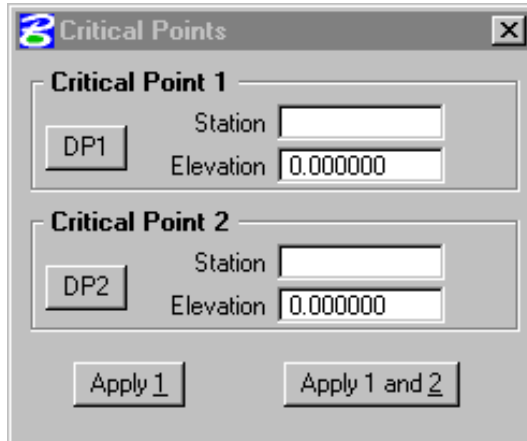


The dialog box titled "K Values For Stopping Sight Distance" contains a table with the following data:

Speed	Sag Min	Sag Max	Crest Min	Crest Max
20	14.7	14.7	8.6	8.6
25	21.7	23.5	14.4	16.1
30	30.8	35.5	23.8	28.8
35	40.8	48.6	35.7	46.4
40	53.4	65.6	53.6	73.9
45	67.0	84.2	76.4	110.2
50	82.5	105.6	106.6	160.0

Below the table are five input fields, each containing "0.0", and four buttons: OK, Cancel, Add, and Delete.

You can also set critical points that the profile will have to go through. To do this, go to *Tools>Critical Points* and the following dialog appears:



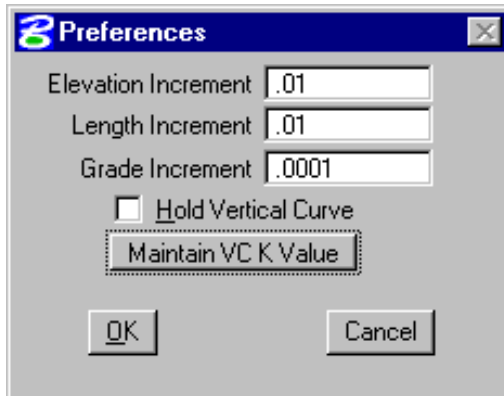
The dialog box titled "Critical Points" contains two sections for defining critical points:

- Critical Point 1:** Includes a button labeled "DP1", a "Station" input field, and an "Elevation" input field set to "0.000000".
- Critical Point 2:** Includes a button labeled "DP2", a "Station" input field, and an "Elevation" input field set to "0.000000".

At the bottom are two buttons: "Apply 1" and "Apply 1 and 2".

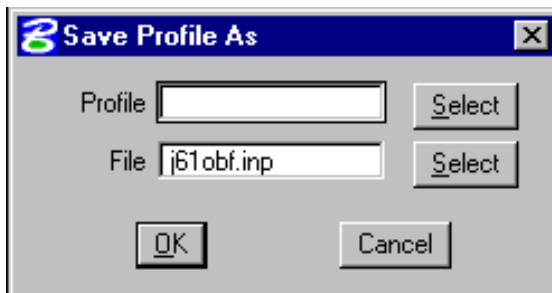
You can either DP to the location or type in a known critical point. From the picture, you see that you have the option for one or two critical points per vertical curve.

You can also set up your preferences for the vertical curves. Under *User>Preferences* you can set up prefs based on the curves. Below is the Preferences dialog:



STEP 5

After you have the vertical profile, the way that you want it, you need to save the profile. Go to *File>Save As* and the following dialog appears:



Type in the profile name that you want to store it under (usually pp*, where * is the name of the profile and pp standing for proposed profile)

Type the file name that you want to give the profile so that you can edit the file in Geopak (usually the same as the profile name). If you type the same name for both, you will need to find the file in you Windows explorer and rename it so that you can edit in cogo.

Example:

Named the profile: pphwy61

Named file: pphwy61

You will need to find the file pphwy61 in explorer and rename it as follows:

pphwy61**JOB#.IOC** where Job# is the job # that you are using in cogo and the OC is the operator code.

NOTE:

If you do not want to rename the file, you can go straight into cogo and do a *File>Restore* You can then go to the editor, delete all the unnecessary garbage, read the file with only the profile information and then save the file.

2. Creating a Proposed Profile in Cogo

Two examples of using Geopak Cogo are provided below:

Example 1 : Shows how to create a normal Profile with a Vertical Curve

Example 2 : Shows how to create a Profile Parallel and an even distance from another profile.

Example 1

Given:	VPI Station	Elevation	Length of vertical curve
	570+00	435.00	
	575+00	443.00	500.0
	580+00	439.75	

Commands:

```
STO PRO PP49
```

```
VPI 1 S 570+00 E 435.00
```

```
VPI 2 S 575+00 E 443.00 L 500.00
```

```
VPI 3 S 580+00 E 439.75
```

```
END PROF
```

```
SAVE FILE PP49 {Saves the input file to PP49(JOB#).I(OPER.#)}
```

NOTE: If your profile begins at a station on a chain that is not in Region 1, you need to add " R 2" or " R 3", etc. (depending on what region the profile begins) just behind the 1st VPI Station.

i.e. VPI 1 S 570+00 R 2 E 435.00

Example 2

Given: You need to copy a profile parallel and at an even distance from another profile.

Commands:

```
STO PRO PP49 FROM PRO XP49 + 0.5
```

```
SAVE FILE PP49
```

NOTE: PP49 is the proposed profile. XP49 is the existing profile.

NOTE: To get a printout of the geometry of a profile, type "PRINT PROFILE name" and then "OUT FILE name".

To define and store station equations on profiles, insert the equation command among the VPI commands at the right location where the station_back of the equation is produced. The stationing of the succeeding VPI's, must follow the station_ahead of the equation.

The equation command is: EQN (BK) station_bk (AH) station_ah

where:

station_bk is the last station of the current region.

station_ah is the first station of the next region.

Example:

```
S PRO P1
VPI 1 S 10+00 E 316.00
EQN BK 13+00 AH 7+00
VPI 2 S 14+00 E 307.5 L 1000
VPI 3 S 24+00 E 312.00
END PRO
```

Create Profile from Points

This 3PC creates a profile (In COGO) from selected points in a profile cell view. This is generally used in a Min. Overlay process when a Bspline Curve has been placed to smooth out a Critical Point Profile. Points are placed along the Bspline Curve and then Selected prior to this 3PC being ran. See Template Minimum Overlay Instructions for placing points along Bspline.